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LATE NEWS

Kansas City P&L launched an $857-million hostile tender offer for neighbor Kansas G&E.

State regulators approved Northeast Utilities' $2.3-billion takeover of Public Service Co. of New Hampshire; the deal requires FERC approval. Seabrook first went to full power on July 19.

Westinghouse agreed to buy 22% of CMS Energy's Palisades nuclear plant. Betchel is to buy 33%. Michigan regulators oppose the plan. An NRC OK is needed.

Public Service Co. of Colorado plans to decommission and repower the closed Fort St. Vrain nuclear unit as an IPP in 5 yrs.

Wheeler Peak Capital Corp. expressed interest in buying Public Service Co. of New Mexico: $12 per share cash, plus equity. PNM is evaluating the suggestion.

Pinnacle West shareholders told PacifiCorp a fair offer would be $30/share in 2 yrs. See below.

No immediate capacity concerns for Top 100

BARRINGTON, IL—Generation capacity problems still lie ahead of the nation's Top 100 electric utility companies. They appear to be doing better than the industry as a whole, since their figures reflect a small increase in reserve margins during 1989. This is a primary conclusion drawn from this year's Top 100 Operations Report, the 20th annual.

This conclusion differs substantially from industrywide reports.

As usual, peak demands were up for the Top 100 electric utilities. But surprisingly, reserve margins were up also, from an average of 17.7 percent in 1988 to 19.3 percent in '89.

This increase, which amounts to 29.7 GW of capacity, was a surprise because the Edison Electric Institute said the worrisome trend of utility capacity margins declining overall continues apace even now. The North American Electric Reliability Council concurs—its estimated capacity margin for the country declined from 22.7 percent in 1989 to 22.0 percent for 1990.

Meanwhile, the mix of types of generation continued to change, also.

Combustion turbines once more added an important and growing amount to the mix of technologies.

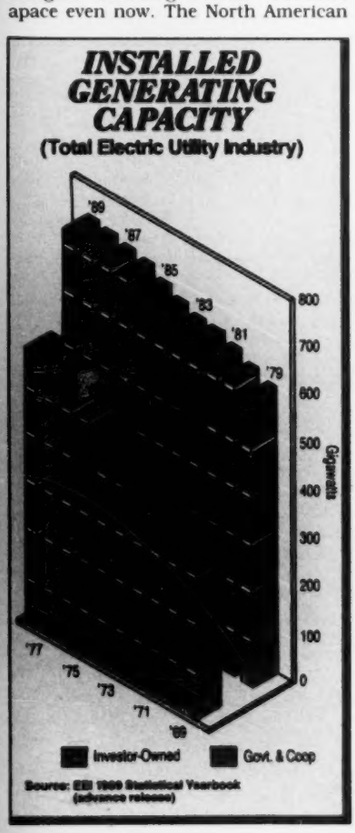
The Top 100 also increased their natural gas usage by 21.8 percent in '89, while adding only 8.9 percent to the amount of coal consumed. And again, the trend of oil consumption was upward—an increase of 46.7 percent was reported.

The nuclear capacity of the Top 100 increased, on average, by 6.4 percent in '89, after losing ground (by 1.6 percent) in '88 compared to '87. The lack of nuclear plant construction planning will decrease capacity growth in this area as plants underway are completed.

To quote from the Energy Information Administration's *Annual Outlook for U.S. Electric Power 1990*, "...the need for additional capacity *beyond what utilities have announced* [emphasis added] ranges from 183 to 267 gigawatts by 2010."

On balance, this year's report seems to show an industry that is caught between conflicting needs and demands, with no clear path ahead.

Top 100 20th annual report starts on page 27



Pinnacle West shareholders ask PacifiCorp to halt offers

PHOENIX—Shareholders of beleagured Pinnacle West Capital Corp. have urged PacifiCorp to refrain from making further offers for the parent of Arizona Public Service Co. (APS).

In a formal position statement, the Board of Directors of the Pinnacle West Shareholders Association (PWSA) requested that PacifiCorp make no more offers for Pinnacle West pending the outcome of APS' rate case, currently before the Arizona Corporate Commission.

Adequacy questioned

The association's board questioned the adequacy of PacifiCorp's offer and challenged PacifiCorp's success in convincing institutional investors that its offer of $21 per share is adequate. In its formal resolution, PWSA declared that "The offer has been judged to be inade-

Continued on page 6

Iowa Board OKs IR-ME merger

DES MOINES, IA—The Iowa Utilities Board has given its approval to the merger of Iowa Resources and Midwest Energy Co. (see *EL&P*, May 1990, p.4).

The merger will create a new holding company, Midwest Resources Inc., with total assets of $2.3 billion. Combined revenues of the two companies in 1989 were $933 million.

Midwest Resources will be headquartered in Des Moines.

There has been no response to required merger information filed with the Federal Trade Commission and the Securities and Exchange Commission.

Pleased with prompt response

Mark W. Putney, chairman and CEO of Iowa Resources, headquartered in Des Moines, said the participants are "pleased with the decision...of the Iowa Utilities Board."

Iowa Power, with approximately 250,000 electric customers, is the principal subsidiary of Iowa Resources. Iowa Public Service Co. has 156,000 electric customers and 347,000 natural gas customers and is Midwest Energy's main subsidiary.

CECo told to refund $400M, roll rates back

CHICAGO—Commonwealth Edison Co. took a double-barreled blast from the Illinois Commerce Commission in late June.

The ICC ordered the utility to refund $400 million collected from customers, under the first step of a two-step phase-in of nuclear plant costs, since Jan. 1, 1989, subject to 5 percent annual interest. The order maintained the rate structure in effect on Jan.1 1989, however.

Then, a day later, the commission ordered the utility to abandon the rate under which the money was collected, amounting to a rate rollback of about $235 million per year, to the level charged by the utility before the Jan. 1, 1989 phase-in increase.

The second step of the phase-in program never was instituted.

Following court order

The Commission's actions resulted from the Illinois Supreme Court's decision that the utility's request for a rate phase-in and structural reorganization effective Jan. 1, 1989, which the commission had approved, was illegal because the commission acted outside its

Continued on page 8

Live-line maintenance: a hot topic at ESMO-90

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News Briefs

JILL MINNER, Special Projects Editor

SCC staff proposes competitive bidding rules for VA utilities

The Virginia State Corporation Commission said its public utilities staff has proposed formal rules for electric utilities seeking bids for capacity power from other power sources. The staff's formal bidding-rules recommendation would replace the SCC's current nonbinding guidelines. "While the rules allow the host utility considerable discretion in conducting competitive bid solicitations, they also include several changes that better protect the interests of the parties offering to sell power to the utility," according to the staff. The suggested rules include:

- Proposals should compete with the utility's own building option.
- The environmental impact of projects should be given weight in the bid evaluation.
- Directly affiliated companies should not participate in a utility's capacity solicitation.
- Utilities with active bidding programs should be allowed to refuse capacity offers made outside the bidding process.
- Negotiating a purchased power contract outside the bidding process should require SCC approval.
- The SCC should provide a forum to resolve disputes over the solicitation and evaluation of purchased power offers.

New Hampshire Yankee head to retire Oct. 1

Edward A. Brown, president and chief executive officer of Seabrook Station operator New Hamphire Yankee (NHY), announced his plans to retire on Oct. 1, 1990. "I was hired to do a job—to head the company responsible for getting Seabrook Station built and on-line to produce electricity for an energy-starved region," Brown explained. "...Seabrook Station is licensed and producing electricity, and will soon be in full commercial operation...Now, it's time for me to spend more time with my family and do some other things." NHY Senior Vice President and Chief Operating Officer Ted C. Feigenbaum is expected to take over for Brown when he retires, according to the company.

Women in Energy Inc. honors DOE director

At its national conference in Chicago this month, Women in Energy Inc. will honor Gail de Planque, director of the U.S. Department of Energy Environmental Measurements Laboratory. She will receive the 1990 Woman of Achievement in Energy Award for her significant scientific, technical and public information contributions that have lead to safer world-wide energy development and environmental protection of the Earth. Women in Energy is an energy communications network founded in 1978 to promote research, knowledge and understanding of all forms of energy.

NCA names chairman; presents service award

The National Coal Association has chosen Wayne T. Ewing as president and J.E. "Jack" Katlic as vice chairman. Ewing, who replaces W. Carter Grinstead, is president of Peabody Development Co. Katlic is senior vice president of American Electric Power Service Corp.

In other news, NCA presented its Distinguished Service Award to Robert H. Quenon for being "a leader whose unselfish contributions throughout his career have fostered the goals and objectives of the entire American coal industry." Quenon is president and chief executive officer of Peabody Holding Co. Inc.

Westinghouse picks new chairman, CEO

Paul E. Lego has taken over as chairman and chief executive officer of Westinghouse Electric Corp., the company announced. Lego, previously president and chief operating officer, succeeds John C. Marous who has retired. "Paul Lego has been one of the chief architects of the business strategies that have made Westinghouse one of the highest-performing blue-chip stocks over the past decade," noted Marous. "His outstanding performance and depth of experience throughout his 34-year career with Westinghouse ideally position him to lead the corporation in the years ahead."

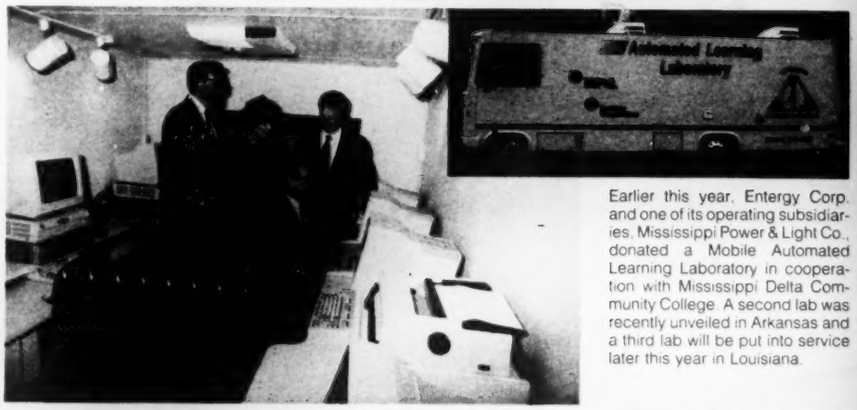
Pardus appointed chairman, Stevens is president at EUA

Eastern Utilities Associates has announced the appointment of Donald G. Pardus as chairman and chief executive officer and John R. Stevens as president and chief operating officer. Pardus succeeds John F.G. Eichorn Jr. who will continue as a member of EUA's Board of Trustees. "I feel privileged to have had the opportunity to work with John Eichorn the past 11 years, and I am pleased he will continue to provide EUA with his insight and wisdom as a member of the Board of Trustees," stated Pardus. Stevens most recently served as senior exeuctive vice president and chief operating officer. "We are fortunate to have Stevens as president, to lead our management team as Eastern Utilities Associates moves forward to meet the challenges of the future," Pardus added.

Consumers Power wins national safety award

Consumers Power Co. said it has been named the nation's safest major gas and electric utility by the National Safety Council for the third consecutive year. The first place award was given to Consumers Power for having achieved the safest work performance in 1989 for a large combination utility. "For Consumers Power to maintain its high level of safety performance so consistently, over such a long period of time, is a truly remarkable accomplishment," said NSC President T.C. Gilchrest. Consumers Power has received the award six times in the past nine years.

AP&L donates mobile learning laboratory



Earlier this year, Entergy Corp. and one of its operating subsidiaries, Mississippi Power & Light Co., donated a Mobile Automated Learning Laboratory in cooperation with Mississippi Delta Community College. A second lab was recently unveiled in Arkansas and a third lab will be put into service later this year in Louisiana.

Arkansas Power & Light Co. and its parent company, Entergy Corp., recently donated a Mobile Automated Learning Laboratory in Little Rock, AR. Entergy, AP&L and the Vocational and Technical Education Division of the Arkansas Department of Education (VoTech) unveiled the $168,000 laboratory which will operate in seven East Arkansas counties. According to VoTech, the main purpose of the mobile lab is to teach basic literacy skills and offer vocational instruction to industry employees. Special training will be provided for potential employees of existing industries or businesses relocating to the area. The lab will also be used for adults seeking their high school equivalency certificates and for special projects with AP&L and Entergy Corp.

Entergy Corp. named Employer of the Year

Entergy Corp. Vice President of Human Resources Rad Eanes (right) accepts the Employer of the Year award from Charles Holland, president of the Louisiana Liaison Group. Entergy was recently honored by the Liaison Group for its leadership among Louisiana companies in the affirmative action and community involvement area. The Liaison Group, which serves as liaison to the U.S. Department of Labor's Office of Federal Contract Compliance Program, consists of equal employment opportunity and human resources professionals from Louisiana's public and private sector.

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COMMENTARY

We need another WHAT???

For the last 25 years, there have been very few equipment exhibitions and expositions of interest to personnel in the electric utility industry. But now, the industry faces the prospect of being inundated in major fall trade shows. The Edison Electric Institute is the Johnny-come-lately, announcing it will sponsor a trade show – the seventh to be held in a 60-day period next fall – to be conducted in conjunction with EEI technical committee meetings.

One can only ask, is this new show necessary? Will it be an added value to the industry? Or will it just be a way for EEI to add to its coffers?

Before the EEI announcement, the fall of 1991 was already full of established industry trade shows. Both the ASME/IEEE Joint Power Generation Conference and the PowerGen '91 Conference (successor to the Coal Technology Conferences of the '70s and '80s) will conduct their fourth annual expositions. The IEEE Transmission and Distribution Conference and Exposition, the industry's largest exposition, held every 30 months, will open in September '91. A couple of weeks later, the International Construction and Utility Equipment Exposition, held every two years, will offer participants the chance to see construction and maintenance equipment in operation.

Other established fall exhibitions include the World Energy Engineering Congress, sponsored by Association of Energy Engineers, and the annual meeting and exposition of the American Cogeneration Association and the Cogeneration and Independent Power Coalition of America.

EEI is promoting its fall exposition for generation, transmission and distribution personnel of member utilities (only). EEI has elected to join a British trade-show promoter to develop the show.

EEI is using the promise of committee-member attendance as a selling point for the exposition. And it can be expected to use the exposition as a selling point to attract committee members to its to-be rescheduled fall committee meetings. Since EEI stands to make a few bucks too, the idea must sound great to EEI's new, market-oriented management.

But the new show has heightened fears on the part of suppliers, who have complained to us that they will be subjected to even more pressure to exhibit than was experienced with EEI's spring annual convention exhibition. Downsized manufacturers, many of whom are in no position to withstand even indirect pressures from their largest customer base, may need the broader exposure that other shows may offer, but complain they may not be able to chance the risks of *not* being in EEI's show.

The essential question is whether EEI's effort will benefit the industry, or will it merely serve to dilute the comprehensive values offered by existing, established expositions. We find it hard to see that it will be anything but counterproductive.

Robert A. Lincicome, Editor-in-Chief

1st utility software directory will cover 350+ programs

TULSA, OK – The electric utility industry will see its first software directory containing more than 350 programs in 28 subject classifications, said the publisher, PennWell Books.

"The *EL&P* Electrical Industry 1991 Software Directory" will include more than 150 suppliers listed two ways, alphabetized according to program titles within subject categories, and an alphabetized listing of suppliers with the programs they offer. The book is edited by H. Wayne Beaty, *Electric Light & Power*'s senior editor – transmission/distribution.

Software subject classifications range from electric utility accounting to transportation vehicles and cover all areas of operations including the latest developments in construction, engineering, design, dispatch, mapping, maintenance, marketing and training, according to PennWell Books.

The soft-cover book is $165, plus $3.50 postage and handling for prepaid orders within the U.S. and Canada. Sales tax will be applied as required. To order or for more information contact: Liz Speck, 1-800-752-9764.

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Heat sizzles Southwest; reservoirs shrink

Record heat baked the Southwest the last week in June. Record temperatures, such as 121° in Phoenix and 112° in Los Angeles, led to record demands on the region's utilities. The fourth dry year in Southern California Edison Co. territory is evident at Shaver Lake, part of SCE's six-lake, 1000-MW hydroelectric complex. Shaver Lake is currently 40,000 acre-feet in area, down from its normal 137,000 acre-feet. The boat dock was moved several hundred yards due to the lake's shrinking size.

NARUC issues annual survey of summer electric bills

WASHINGTON – The average cost of electricity during the summer of 1989 was 8.32 cents per kilowatthour, according to the National Association of Regulatory Utility Commissioners' (NARUC) national survey of summer electric bills.

NARUC found that residential customers in the Northeast and Pacific regions paid more on average for electricity than did customers in the Northwest and Rocky Mountain regions.

Customers in the least expensive service territory, Lewiston, ID, paid approximately 4.2 cents per kilowatthour, while customers in Chicago, IL, the most expensive service territory, paid about 14 cents per kilowatthour, according to the survey.

NARUC said its survey contains comparisons for the largest service territories of the major investor-owned regulated electric utilities in 49 states and the District of Coumbia.

A total of 187 distinct service territories were surveyed for residential service during June, July and August of 1989. Typical residential summer electric bills varied by more than 230 percent depending on the service territory, according to NARUC.

Copies of the survey can be obtained for $19.00 from: NARUC, P.O. Box 684, Washington, DC 20044.

Twelve Most Expensive Companies

Company Name	State	Avg. Cost Cents 500 kWh	Summer '89 Rank
Commonwealth Edison Co.	Illinois	$0.143	1
Consolidated Edison Co. of N.Y.	New York	$0.142	2
Long Island Lighting Co.	New York	$0.140	3
Philadelphia Electric Co.	Pennsylvania	$0.129	4
Orange & Rockland Utilities, Inc.	New York	$0.127	5
Hawaii Electric Light Co.	Hawaii	$0.124	6
Toledo Edison	Ohio	$0.124	7
Cleveland Elec. Illuminating	Ohio	$0.123	8
Kauai Electric Co.	Hawaii	$0.121	9
Nantucket Electric Company	Massachusetts	$0.118	10
Duquesne Light Co.	Pennsylvania	$0.117	11
Commonwealth Electric Co.	Massachusetts	$0.116	12

Twelve Least Expensive Companies

Company Name	State	Avg. Cost Cents 500 kWh	Summer '89 Rank
Washington Water Power Co.	Idaho	$0.042	187
Washington Water Power Co.	Washington	$0.043	186
Pacific Power & Light Co.	Washington	$0.043	185
Idaho Power Co.	Idaho	$0.047	184
Idaho Power Co.	Oregon	$0.048	183
Montana Power Co.	Montana	$0.048	182
Kentucky Utilities Co.	Kentucky	$0.049	181
Portland General Electric Co.	Oregon	$0.051	180
Puget Sound Power & Light Co.	Washington	$0.051	179
Minnesota Power & Light Co.	Minnesota	$0.052	178
Edison Sault Electric Co.	Michigan	$0.053	177
Citizens Utilities Company	Vermont	$0.055	176

Source: NARUC 1989 Summer Survey of Residential Electric Bills

THE TOP 100 ELECTRIC UTILITIES

1989 OPERATING PERFORMANCES

Henry Stein
Senior Editor—Generation

BARRINGTON, IL—The *EL&P* Top 100 electric utilities saw their fuel usage go up in all categories in 1989 compared to 1988's (Table 1) and their average peak demand go up by a little over 4 percent (Table 2). Reflecting this trend, to hardly anyone's surprise, total energy usage in the United States kept on climbing last year—to 81.3 quads, according to a compilation made by by the American Council for an Energy-Efficient Economy, the Alliance to Save Energy and the Energy Conservation Coalition

On the other hand, total energy use per dollar of gross national product (GNP) declined 1.5 percent, energy use per dollar of industrial value added declined 1.5 percent, use per service worker also declined slightly, and energy consumption per household held steady (also as compiled by the three groups mentioned in the previous paragraph).

More growth ahead

The Energy Information Administration (EIA) expects sales of electricity in the U.S. to grow by 2.3 percent per year between 1989 and 2010, reaching 4300 TWh (terawatthours—billion kilowatthours) by the end of the time period.

EIA says the largest growth will be in the commercial and industrial sectors, with slower growth in the residential area. Slowed growth in residential will be due to a slowdown in new home construction in the country and improved thermal efficiencies in new and existing structures.

The North American Electric Reliability Council's (NERC) advance release of its "1990 Electricity Supply & Demand for 1990-1999" notes that last *summer's* peak demand was 1.1 percent less than 1988's, but was 0.3 percent above the 1989 forecast. The '89 moderate summer was the reason for the demand decline, NERC says.

However, the 1989/90 *winter* peak demand in Canada exceeded the previous winter's peak by 2.7 percent. And the 1989 annual net energy for loads for both the U.S. and Canada were over their '88 actual figures and '89 forecasts.

Adding to energy concerns, this year's projections of electric energy peak demand by its members for the next 10 years have been raised by an additional 1.8 percent per year in the United States and by 2.9 percent per year in Canada when compared to last year's 10-year projections.

Margins—different sources/signals

The *EL&P* Top 100 reported their '89 average margin *increased* from 17.7 percent in '88 to 19.3 percent in '89, which works out to about a 29.7 GW addition last year.

However, the worrisome trend of declining estimated capacity margins continues apace (Fig. 1), according to the Edison Electric Institute (EEI). NERC concurs, saying, for instance, that in its East Central Area region, the projected summer capacity margin declined to a low 17.4 percent for this summer and is heading for an uncomfortable 15.5 percent by 1999.

In the Southeastern region, which is the region with the lowest margin, NERC estimates the winter capacity margin will be 22.4 percent for 1990/91 and will go down to a still-healthy 20.2 percent there by 1999. However, some of NERC's subregions, such as Florida (15.7 percent for 90/91), do not have such comfortable numbers for the coming winter.

Also, as previously noted (*EL&P*, June, p.54), the utility industry estimates that its new supplies will not meet projected demands and will fall short by the year 2000. When the total of utility and non-utility planned capacity additions are compared to estimated growth of demand, the trend shows up more clearly (Fig. 2). The situation does not look much better for the period after the turn of the century, either.

Not just new generation, T&D

Looking to make use of all avenues for meeting the energy supply situation, almost all utilities have started demand-side management programs. Many of them are attempting to reduce peak demand by encouraging customers to use electricity more efficiently or to use it during off-hours when overall demand is lighter.

One popular method is for a utility to offer its customers rebates if they allow their air conditioning to be automatically switched off for short periods on hot summer afternoons. A usual time period for shutoff is 10 minutes every hour.

Edison Electric Institute also notes that a growing number of utilities are implementing time-of-day pricing that reflects the electricity demand and production costs. The goal here is to spread demand over all hours of the day to make better use of expensive generating equipment.

The institute says that both governments and environmentalists are supporting their utilities in these endeavors.

Overall comparisons

Comparing '89 and '88 from another perspective, the Top 100 reported:

- They increased generating capacity by 6.4 percent.
- Their coal usage went up by 8.9 percent (Table 1), and nuclear capacity increased 6.4 percent (Table 3).
- Natural gas consumption jumped by 21.8 percent.
- Oil usage surged by 46.7 percent.

For comparison, EEI said:

- The electric utility industry as a whole increased its generation by 2.8 percent. (The EIA number is 2.6 percent, a close match.)
- Coal's share of this total decreased from 57.0 percent to 55.8 percent,—while nuclear's went down from 19.5 percent to 19.0 percent.
- Hydroelectric power took up some of the slack, increasing its percentage in '89 to 9.5 percent.
- Natural gas took 9.5 percent of the total.
- Oil-fired units equalled 5.7 percent.

EEI also said electric energy sales to ultimate customers totalled approximately 2600 TWh in 1989, an increase over 1988 of 2.3 percent. This sales rise was from an installed generating capacity that increased a measly 0.9 percent in 1989 to total 730.5 GW as of Dec. 31.

All this power went to approximately 108-million ultimate customers (again, as of Dec. 31, 1989). About 88 percent of these were in the residential sector.

Figure 1. Total U.S. Electric Capacity Margins (excluding Alaska & Hawaii)

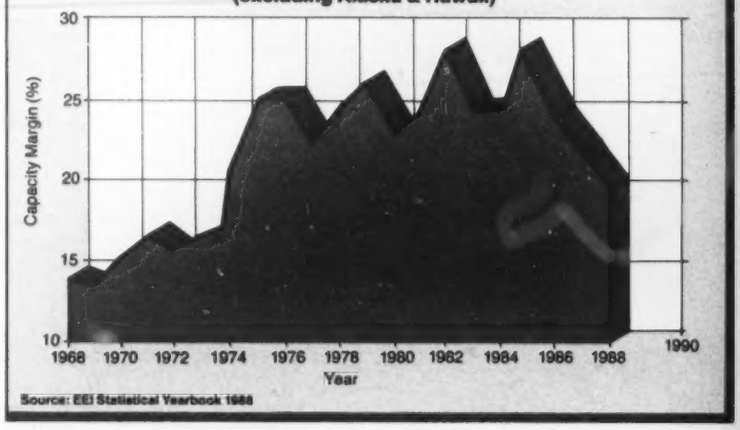
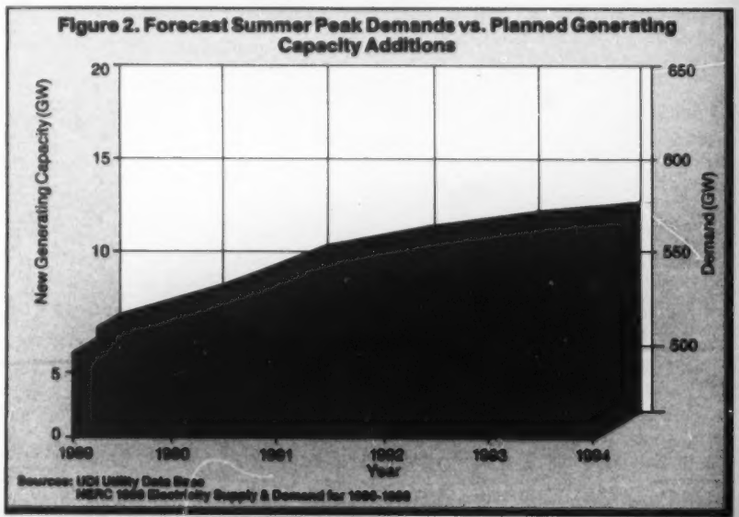


Figure 2. Forecast Summer Peak Demands vs. Planned Generating Capacity Additions



OPERATING PERFORMANCES

(The number of residential customers went up by 1.5 percent in '89.)

To not quite keep up with demand, investor-owned utilities (IOUs) by themselves increased their spending 4.3 percent to $111.7 billion, said EEI in its "Advance Release of Data for the 1989 Statistical Yearbook of the Electric Utility Industry." Of this outlay, fuel represented 29.0 percent, which was a decrease from the '88 portion of 29.3 percent.

IOUs alone spent $23.8 billion in '89 for construction, up from $23.6 billion the year before.

However, EIA notes that all utilities expect to buy over 300 TWh from non-utility sources by 2010, which will be equivalent to 8 percent of total electricity sales.

Cogens & IPPs, a growing force

Much of the interest in actual capacity growth concentrated on what the cogenerators and independent power producers were doing. The most recent data from the Utility Data Institute (UDI) points out that more than 67 Twh (net) were purchased from cogenerators and IPPs that were in UDI's database in 1988, which was a large increase from the 47 TWh bought from them in 1987 and the 36 TWh of 1986.

(UDI also interpreted figures in the *EEI Statistical Yearbook/1988* and concluded that EEI had determined all utilities had received 52.6 TWh from cogenerators and IPPs in 1987 and 71.5 TWh in 1988.)

The three large IOUs in California purchased 23.7 TWh in 1988 from cogens and IPPs, and five utilities in Texas bought 22.5 TWh from them. Other states where large amounts of cogen-IPP power were bought in 1988 included North Carolina (at 3.09 TWh), Pennsylvania (3.09 TWh) and Virginia (2.54 TWh).

Perhaps that is why EIA estimates that through the year 2000 most new capacity will be gas-fired combined-cycle plants and simple-cycle combustion turbines.

This situation could bring problems of its own. Natural gas consumption in the U.S. could expand by 20-30 percent by 2000, notes EIA in its "Annual Energy Outlook 1990." The expansion could result in a doubling of net gas imports.

After 2000, it is felt that coal-fired plants "will dominate new capacity additions," in the U.S.

But EIA says King Coal will continue to dominate the electric utility industry here. It predicts coal demand will probably grow at 2.1 percent annually—more than any other fuel.

Renewables...?

The agency also predicts growth in renewable energy generation until it accounts for 9 percent of the total energy

TABLE 1.
FOSSIL FUEL CONSUMPTION

	1988	Change	1989	Change
Coal (million tons)	529	-26.4%	576	+8.9%
Oil (million bbl)	226	+24.3%	332	+46.7%
Gas (billion cu ft)	2,264	+3.9%	2,758	+21.8%

TABLE 6. HEAT RATES AND FUEL CONSUMPTION

Company	Rank	Heat Rate (Btu/kWh)	Up or Down	Coal (1000 tons)	Oil (1000 bbl)	Gas (1000 MCF)	Percent Change In Coal	Oil	Gas
United Illuminating	1	9,568	D	853	6,065	2,141	-1	-2	4879
Commonwealth Energy System*	2	9,601	U	0	8,034	2,632	0	0	14
American Electric Power*	3	9,851	D	44,990	565	0	7	0	0
Cincinnati Gas & Electric	4	9,900	D	8,583	124	148	2	182	-28
New York State Electric & Gas	5	9,931	U	6,472	25	0	6	-11	0
Southwestern Public Service	6	9,939	D	8,152	29	36,815	3	867	30
DPL*	7	9,939	D	5,674	17	86	-5	NA	NA
Detroit Edison	8	9,940	D	18,276	1,184	16,093	-1	9	23
Allegheny Power System*	9	9,967	U	17,107	0	0	2	0	0
New England Electric*	10	10,000	U	3,549	8,662	2,147	NA	NA	NA
Duke Power	11	10,013	D	9,791	176	350	11	17	-19
Potomac Electric Power	12	10,037	U	6,982	6,349	11,215	1	39	615
CMS Energy*	13	10,047	U	6,525	1,071	382	-2	-8	40
Centerior Energy*	14	10,075	NA	29,397	122,043	456,778	NA	NA	NA
Green Mountain Power	15	10,075	D	29[1]	122	457	83	0	4
Florida Progress* (FPC)	16	10,076	U	5,626	13,002	5,379	-4	60	117
Southern Company*	17	10,077	D	43,505	240	16,143	1	-47	99
Cilcorp*	18	10,110	U	2,169	0	19	-2	0	-39
Public Service of Indiana	19	10,124	D	11,484	9	0	7	NA	0
Central Hudson Gas & Electric	20	10,150	U	874	5,065	4,813	-1	38	116
Idaho Power	21	10,157	D	3,145	4	0	-1	300	NA
Union Electric	22	10,182	D	10,728	36	390	-2	-29	-28
TECO Energy*	23	10,207	U	6,759	124	0	-2	70	0
DQE*	24	10,213	D	4,653	60	173	2	-6	-16
Dominion Resources*	25	10,221	D	11,060	6,658	3,738	9	56	245
Pennsylvania Power & Light	26	10,264	D	460	6,548	0	-3	-7	0
Pacific Gas & Electric	27	10,304	NA	0	4,911	226,312	NA	NA	NA
Boston Edison	28	10,309	U	0	9,990	36,890	0	-19	296
SCANA Corporation* (SCE&G)	29	10,335	U	4,509	21	2,078	0	163	17
Orange & Rockland Utilities	30	10,362	U	589	2,128	12,859	30	12	9
Niagara Mohawk Power	31	10,376	U	3,499	10,414	27,848	14	-13	130
Southern California Edison	32	10,377	D	5,090	5,379	183,837	-12	18	8
Carolina Power & Light	33	10,418	D	9,726	169	7,179	9	177	70
Central Illinois Public Service	34	10,425	D	4,624	19	0	3	-57	0
Kentucky Utilities	35	10,428	U	5,491	2	0	-10	-100	0
General Public Utilities*	36	10,440	U	7,820	2,543	16,447	5	23	1
Midwest Energy*	37	10,457	U	2,512	196	285	24	3163	-83
Pacificorp	38	10,458	D	22,337	106	621	58	61	0
IPALCO Enterprises*	39	10,466	U	5,587	49	0	-5	-31	0
Central & South West*	40	10,474	U	16,178	359	217,999	2	354	11
Eastern Utilities Associates*	41	10,478	-	519	2,853	77	10	-51	NA
Houston Industries*	42	10,489	D	17,457	466	240,124	13	16	-11
Gulf States Utilities	43	10,490	U	1,959	20	163,171	0	-93	5
Louisville Gas & Electric	44	10,500	U	4,460	0	103	11	0	-53
Wisconsin Power & Light	45	10,506	U	3,568	20	230	-2	-9	-37
FPL Group* (FP&L)	46	10,523	U	652	25,998	131,147	18	-1	37
Iowa Southern*	47	10,530	D	1,492	6	0	7	-65	0
Illinois Power	48	10,538	U	6,512	193	781	-4	21	6
Baltimore Gas & Electric	49	10,543	U	4,731	5,681	7,843	0	134	123
Consolidated Edison	50	10,546	U	0	29,129	91,576	0	20	12
Atlantic Energy*	51	10,553	U	1,106	1,478	2,750	-2	3	257
Sierra Pacific Power	52	10,610	U	867	358	15,472	-4	-52	266
Ohio Edison	53	10,611	U	11,608	32	0	0	NA	-100
Portland General*	54	10,623	U	1,696	75	12,784	12	0	0
Northern Indiana Public Service	55	10,634	U	6,620	0	3,594	6	-100	22
Kansas City Power & Light	56	10,634	D	5,695	60	194	-4	-19	5
Public Service Enterprise Group*	57	10,635	U	4,348	5,973	37,990	9	1	7
St. Joseph Light & Power Co.	58	10,637	D	623	19	154	NA	NA	NA
Central Louisiana Electric	59	10,648	U	2,071	22	29,079	-7	0	12
Oklahoma Gas & Electric	60	10,652	D	6,392	29	93,114	0	109	-1
Iowa Resources*	61	10,657	D	2,577	26	289	36	160	-60
Rochester Gas & Electric	62	10,667	U	826	823	761	24	-12	2523
Public Service of Colorado	63	10,667	D	6,910	50	4,221	5	79	-99
Hawaiian Electric*	64	10,685	U	0	13,196	0	0	5	0
Central Maine Power	65	10,716	U	0	3,551	0	0	18	0
Northern States Power	66	10,719	-	11,639	82	1,457	7	-44	-38
Pinnacle West Capital*	67	10,739	U	7,190	55	19,831	19	NA	235
Southern Indiana Gas & Electric	68	10,767	D	2,530	0	180	-1	0	-15
Wisconsin Public Service	69	10,771	U	3,466	18	717	-1	-25	28
Entergy Corp.*	70	10,777	D	6,876	1,850	180,953	-10	17	-1
Tucson Electric Power	71	10,789	D	2,410	1	1,791	7	0	-21
El Paso Electric	72	10,790	U	400	25	31,130	-7	0	60
Montana Power*	73	10,815	D	3,993	14	327	-3	-48	18
Kansas Gas & Electric	74	10,818	D	2,766	17	9,473	-7	NA	20
Philadelphia Electric	75	10,880	U	3,079	5,949	2,209	-2	19	NA
Minnesota Power	76	10,916	D	3,830	0	0	-7	0	0
Iowa-Illinois Gas & Electric	77	10,930	U	2,602	9	300	-2	0	-42
Puget Sound Power & Light	78	10,952	D	3,481	178	7,751	NA	NA	NA
Commonwealth Edison	79	10,975	D	8,473	1,356	985	-17	-31	-14
Public Service of New Mexico	80	10,980	D	3,926	3	439	13	-99	42
Texas Utilities*	81	10,992	U	31,082	2,616	354,234	5	353	-2
Utilicorp United	82	11,082	U	1,488	160	88	-5	515	-55
Nevada Power	83	11,120	U	2,532	305	5,667	-1	51	22
Madison Gas & Electric	84	11,127	U	756	2	472	-5	-50	-19
Interstate Power	85	11,212	D	2,003	10	762	1	-29	-71
IE Industries*	86	11,294	D	865	16	NA	-21	-20	NA
Central Vermont Public Service	87	11,336	U	54[1]	73	11	73	19	0
KPL Gas Service	88	11,367	U	6,219	59	1,700	-1	393	-32
Empire District Electric	89	11,501	U	7,970	23	147	341	28	116
Otter Tail Power	90	11,738	U	2,082	1,953	0	4	13	0
MDU Resources Group, Inc.	91	12,291	U	1,636	8	13	NA	NA	NA
Centel*	92	12,437	-	881	10	4,028	0	11	-8
Washington Water Power*	93	NA	NA	1,816	9	46	1	29	820
Delmarva Power & Light	94	NA	NA	2,495	4,152	5,856	-10	-6	102
TNP Enterprises* (Tex-NM Power)	95	NA	NA	0	0	8	0	0	33
Public Service of New Hampshire	96	INFORMATION NOT PROVIDED BY COMPANY							
San Diego Gas & Electric	97	INFORMATION NOT PROVIDED BY COMPANY							
Northeast Utilities*	98	INFORMATION NOT PROVIDED BY COMPANY							
Wisconsin Energy*	99	INFORMATION NOT PROVIDED BY COMPANY							
Long Island Lighting	100	INFORMATION NOT PROVIDED BY COMPANY							

*Holding company
NA - Not Available

[1] Wood, not coal
0 (in change columns) - Less than 1% change and/or zero amounts in both years

TABLE 7. PEAK DEMAND AND CAPABILITY

Company	Season Peak (MW)	Change (%)	Winter (W) or Summer (S)	Total System Capacity at Time of Peak (MW)	Total System Reserve (%)	Owned Capacity At Peak (MW)	Owned Reserve (%)	Load Factor (%)
Allegheny Power System*	6,489	7.3	W	7,798	20	7,906	22	67.0
American Electric Power*	17,700	3.1	W	23,950	35	23,849	35	64.2
Atlantic Energy*	1,700	3.9	S	1,880	11	1,528	-10	56.1
Baltimore Gas & Electric	5,314	-1.2	S	6,164	16	5,461	3	57.4
Boston Edison	2,626	0.0	S	NA	NA	NA	NA	61.4
Carolina Power & Light	7,814	-3.3	S	9,584	23	9,014	15	59.8
Centel*	INFORMATION NOT PROVIDED BY COMPANY							
Centerior Energy*	5,428	NA	S	6,590	21	6,590	21	64.0
Central Hudson Gas & Electric	888	-0.3	S	1,074	21	1,102	24	65.6
Central Illinois Public Service	1,586	-8.0	S	2,439	54	2,637	66	58.2
Central Louisiana Electric	1,148	2.2	S	1,706	49	1,686	47	53.9
Central Maine Power	1,545	6.3	W	1,875	21	1,067	-31	72.2
Central Vermont Public Service	410	2.5	W	493	20	101	-75	65.9
Central & South West*	10,008	-1.3	S	13,843	38	13,537	35	58.4
Cilcorp*	1,075	-4.0	S	1,136	6	1,136	6	55.1
Cincinnati Gas & Electric	3,930	-1.7	S	4,354	11	4,054	3	57.3
CMS Energy*	5,753	-2.0	S	6,455	12	6,416	12	64.0
Commonwealth Edison	16,785	-3.9	S	22,506	34	22,521	34	52.6
Commonwealth Energy System*	919	1.3	W	1,032	12	225	-76	NA
Consolidated Edison	8,585	-0.4	S	10,543	23	9,239	8	51.6
Delmarva Power & Light	2,216	0.5	W	2,498	13	2,498	13	59.5
Detroit Edison	8,704	-4.7	S	9,942	14	9,878	13	57.3
Dominion Resources*	12,697	8.0	W	12,814	1	12,082	-5	55.4
DPL*	2,556	-1.1	S	2,652	4	2,652	4	59.7
Duke Power	13,611	-0.1	S	16,126	18	15,840	16	61.8
DQE*	2,381	4.4	S	2,800	18	2,790	17	59.6
Eastern Utilities Associates*	831	2.2	S	986	19	571	-31	59.9
El Paso Electric	1,076	7.4	S	1,498	39	773	-28	67.0
Empire District Electric	638	2.2	W	801	26	711	11	52.2
Entergy Corp.*	11,485	0.4	S	15,471	35	15,684	37	59.1
Florida Progress* (FPC)	5,832	-5.8	S	5,970	2	5,997	3	46.6
FPL Group* (FP&L)	13,988	13.0	S	11,163	-20	13,629	-3	57.1
General Public Utilities*	7,711	-3.5	S	8,985	17	6,865	-11	NA
Green Mountain Power	INFORMATION NOT PROVIDED BY COMPANY							
Gulf States Utilities	5,040	2.6	S	6,541	30	6,438	28	66.4
Hawaiian Electric*	1,359	2.8	W	1,605	18	1,558	15	72.0
Houston Industries*	10,456	0.3	S	14,464	38	13,644	30	61.0
Idaho Power	2,327	7.7	W	2,583	11	2,683	15	61.0
IE Industries*	991	-5.5	S	1,223	23	1,053	6	55.9
Illinois Power	3,245	-14.0	S	3,915	21	3,913	21	55.7
Interstate Power	896	-2.5	S	1,089	22	951	6	59.6
Iowa Resources*	1,358	-1.1	S	1,622	19	1,142	-16	46.8
Iowa Southern*	495	-3.5	S	600	21	601	21	54.7
Iowa-Illinois Gas & Electric	1,053	-2.3	S	1,297	23	1,392	32	52.0
IPALCO Enterprises*	2,387	-3.6	S	2,845	19	2,845	19	57.6
Kansas City Power & Light	2,541	-4.3	S	3,025	19	3,025	19	49.0
Kansas Gas & Electric	1,559	-5.9	S	2,425	56	2,434	56	56.0
Kentucky Utilities	2,919	5.5	W	3,417	17	3,158	8	53.9
KPL Gas Service	1,933	-4.8	S	2,434	NA	2,589	34	51.0
Long Island Lighting	INFORMATION NOT PROVIDED BY COMPANY							
Louisville Gas & Electric	2,022	-5.6	S	2,293	13	2,293	13	53.6
Madison Gas & Electric	513	7.5	S	579	13	594	16	52.0
MDU Resources Group, Inc.	384	-0.8	S	453	18	412	7	54.0
Midwest Energy*	985	1.7	S	1,139	16	1,189	21	48.6
Minnesota Power	1,287	9.0	W	1,559	21	1,274	-1	79.0
Montana Power*	1,420	-25.3	W	1,399	-1	1,207	-15	70.0
Nevada Power	2,092	11.1	S	2,304	10	1,741	-17	48.6
New England Electric*	4,225	2.9	S	5,223	24	3,915	-7	65.0
New York State Electric & Gas	2,597	0.9	W	3,061	18	2,680	3	64.7
Niagara Mohawk Power	6,376	2.5	W	7,574	19	5,614	-12	66.4
Northeast Utilities*	INFORMATION NOT PROVIDED BY COMPANY							
Northern Indiana Public Service	2,451	-0.2	S	3,396	39	3,396	39	63.4
Northern States Power	6,534	-5.6	S	7,783	19	6,848	5	58.1
Ohio Edison	5,152	2.5	S	6,157	20	6,157	20	67.8
Oklahoma Gas & Electric	4,248	-4.0	S	5,703	34	5,703	34	50.0
Orange & Rockland Utilities	941	-3.1	S	1,151	22	1,020	8	52.4
Otter Tail Power	588	6.7	W	708	20	600	2	58.5
Pacific Gas & Electric	15,065	NA	S	22,100	47	17,210	14	62.7
Pacificorp	6,875	62.1	W	8,216	20	6,814	-1	86.0
Pennsylvania Power & Light	6,000	7.8	W	7,864	31	8,329	39	59.5
Philadelphia Electric	6,467	-5.3	S	5,802	-10	7,759	20	60.5
Pinnacle West Capital*	3,603	8.0	S	350	-90	4,274	19	55.7
Portland General*	3,519	21.6	W	4,204	19	2,721	-23	51.9
Potomac Electric Power	5,241	0.6	S	5,825	11	5,375	3	54.7
Public Service Enterprise Group*	8,324	-4.8	S	9,936	19	10,092	21	55.0
Public Service of Colorado	3,484	3.6	S	4,051	16	2,729	-22	69.8
Public Service of Indiana	4,272	-2.9	W	5,921	39	5,687	33	59.0
Public Service of New Hampshire	INFORMATION NOT PROVIDED BY COMPANY							
Public Service of New Mexico	1,006	5.2	S	1,578	57	1,571	56	64.1
Puget Sound Power & Light	4,299	18.2	W	4,447	3	1,817	-58	49.0
Rochester Gas & Electric	1,249	-2.0	S	1,600	28	1,238	-1	62.4
San Diego Gas & Electric	INFORMATION NOT PROVIDED BY COMPANY							
SCANA Corporation* (SCE&G)	3,144	4.1	S	3,907	24	3,891	24	57.0
Sierra Pacific Power	922	1.5	W	1,191	29	836	-9	70.7
Southern California Edison	15,632	-2.2	S	20,531	31	14,077	-10	59.0
Southern Company*	24,399	3.2	S	28,789	18	29,807	22	58.6
Southern Indiana Gas & Electric	941	-8.1	S	1,167	24	1,167	24	65.4
Southwestern Public Service	3,019	6.7	S	4,251	41	4,051	34	64.5
St. Joseph Light & Power Co.	310	-4.0	S	381	23	356	15	51.8
TECO Energy*	2,712	3.5	W	2,936	8	3,142	16	57.7
Texas Utilities*	17,146	-2.7	S	20,448	19	18,369	7	58.1
TNP Enterprises* (Tex-NM Power)	INFORMATION NOT PROVIDED BY COMPANY							
Tucson Electric Power	1,304	6.0	S	1,286	-1	1,300	0	57.9
Union Electric	6,845	-1.9	S	7,934	16	7,516	10	54.1
United Illuminating	1,094	-3.3	S	1,290	18	1,237	13	58.5
Utilicorp United	INFORMATION NOT PROVIDED BY COMPANY							
Washington Water Power*	1,660	22.1	W	1,270	-23	1,132	-32	48.0
Wisconsin Energy*	INFORMATION NOT PROVIDED BY COMPANY							
Wisconsin Power & Light	1,777	-2.3	S	1,998	12	1,915	8	61.7
Wisconsin Public Service	1,504	-0.4	S	1,691	12	1,707	13	71.9

* Holding company

NA - Not Available/Not Applicable

requirements in 2010. This growth will not be seen only in the electric utilities—they will use more hydropower—but industrial generators will use more heat from wood waste, and homes will utilize more wood for heating.

Heat rates improve once more

The median heat rate for the Top 100 in 1989 was 10,546 Btu/kWh, which compares favorably with 1988's median heat rate of 10,569 Btu/kWh. This 0.2-percent drop, although quite small, seems to indicate how seriously utilities were working to increase their efficiencies, especially since the '88 number had been higher than 1987's. This "blip" up in '88 had itself reversed the previous five-year trend of lower median heat rates from year-to-year.

Among the Top 100 (Table 6), there was some shifting of heat rate positions. United Illuminating Co. moved from No. 4 to the top spot, and Cincinnati Gas & Electric Co. improved its operations enough to jump from the No. 8 place to No. 4. But the largest leap among the top 10 in the list was by Southwestern Public Service Co., which moved up 15 places to become No. 6.

The individual generating unit operated more than 50 percent of the time that had the best heat rate was Central & South West Services Inc.'s Commanche Power Station (Table 4). Duke Power Co. not only grabbed the No. 2 spot in this list, but also claimed four more places in this list of the top 20 individual units with the best heat rates.

Not satisfied with this showing, Duke also held onto its No. 1 spot as the Top 100 utility with the best overall heat rate for conventional fossil-fueled boilers (Table 5).

American Electric Power Co. Inc. was no slouch in the top individual units department, claiming four positions in the top-20 listings. In terms of overall showing in this list, New England Electric System and Detroit Edison Co. came next, with two units apiece.

Peak demand keeps climbing

As mentioned near the beginning of this article, although peak demand on the Top 100 kept up its ascending trend, in general, they seemed to have the situation in hand (Tables 2 and 7). One company that appeared not to be doing so was Philadelphia Electric Co.,

TABLE 2. PEAK DEMAND AND RESERVE MARGINS

	1988	Change	1989	Change
Seasonal Peak (MW)	399,275	+5.2%	415,615	+4.1%
Total System Capability (MW)	465,982	+1.0%	495,659	+6.4%
System Reserve Margin	17.7%		19.3%	
Total Owned Capability (MW)	438,230	-0.4%	466,245	+6.4%
Owned Reserve Margin	6.5%		12.2%	
Average Load Factor	58.7		58.6	

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which had a large shortage of reserve margin. Washington Water Power Co. and FPL Group Inc. were in much more "comfortable" positions, but still had large negative reserves in '89.

The remainder of the reporting companies appeared to be fairly "comfortable," with reserve margins ranging from a close – 1 percent to a much more comfortable + 57 percent.

A sampling of reports from some utilities places some of the generalizations in perspective.

Hot weather in June 1989 hit the Pennsylvania-New Jersey-Maryland Power Pool (PJM) area hard at the same time a number of their generating units were finishing up scheduled outages. In addition, systems just south of PJM had serious capacity shortages, and imports from the west were cut to zero. So PJM implemented a 5-percent voltage reduction one day.

The next day, the power pool had to interrupt customers on curtailable rates, issue a voltage reduction warning, curtail non-essential use in the buildings of its 11 member utilities and ask industrial customers to voluntarily cut down their usage. These measures so slowed the load growth that no voltage reduction was necessary on the second day.

However, voltage reductions were needed on one day later in the month and in July.

In the spring of 1990, General Public Utilities Corp. issued a warning about the PJM power supply situation, but the utility claimed it anticipated no similar problems during the forthcoming summer. Still, its notice went on to delineate the various curtailment methods that might be implemented in case of severe shortages of capacity.

Gulf Power Co. reported in mid-June of this year that customers were demanding record amounts of electricity but that it felt confident it could meet the load. A new record of 1753 MW was set for the utility on June 19. This was 55 MW higher than the company's all-time previous summer record of 1698 MW.

A statement from the utility "encouraged" customers to not waste energy.

Kansas Gas & Electric Co. said that its customers' hourly electricity usage hit a record high on June 28 of 1.71 GWh. This amount compared to the 1.68 GWh hourly record set Aug. 15, 1988, which was the utility's previous all-time high.

Then on July 2, the new record was surpassed by a usage of 1.73 GWh between 4:00 and 5:00 p.m.

TABLE 3.
TYPE OF GENERATION (MW)

Type	1988	Change	1989	Change
Conventional Steam	325,687	- 1.4%	337,419	+ 3.6%
Nuclear	69,498	- 1.6%	73,969	+ 6.4%
Combustion Turbine — Simple & Combined-Cycle	NA	NA	33,649	NA
Hydro & Pumped Storage	22,272	- 1.5%	26,430	+ 18.7%
Other	0	+ 0.0%	4,339	NA
Total	417,457	- 0.3%	475,805	+ 14.0%

TABLE 8. TYPE OF GENERATION IN THE SYSTEM

Company	Conventional Steam (MW)	(%)	Last Year Change (MW)	Nuclear (MW)	(%)	Last Year Change (MW)	Combustion Turbine** (MW)	(%)	Hydro & Pump Storage (MW)	(%)	Last Year Change (MW)	Other (MW)	(%)
Allegheny Power System*	7,004	89	0	0	0	0	0	0	902	11	0	0	0
American Electric Power*	20,865	87	1326	2,130	9	0	18	0	836	4	48	0	0
Atlantic Energy*	787	52	-10	373	24	0	359	23	0	0	0	9	1
Baltimore Gas & Electric	3,108	57	-1633	1,650	30	0	719	13	0	0	0	3	0
Boston Edison	5,364	86	3558	667	11	0	208	3	0	0	0	0	0
Carolina Power & Light	5,102	57	34	2,676	30	0	1,018	11	218	2	0	0	0
Centel*	INFORMATION NOT PROVIDED BY COMPANY												
Centerior Energy*	4,390	66	NA	1,860	28	NA	135	2	305	5	NA	4	0
Central Hudson Gas & Electric	907	83	-1	97	9	0	38	3	43	4	0	5	0
Central Illinois Public Service	2,634	100	-43	0	0	0	0	0	0	0	0	3	0
Central Louisiana Electric	1,681	100	0	0	0	0	0	0	0	0	0	0	0
Central Maine Power	688	63	139	29	3	0	42	4	340	31	3	0	0
Central Vermont Public Service	22	19	0	20	17	0	29	25	42	36	1	2	2
Central & South West*	12,253	87	-392	630	4	315	522	4	0	0	0	725	5
Cilcorp*	1,106	97	0	0	0	0	30	3	0	0	0	0	0
Cincinnati Gas & Electric	3,579	88	-1	0	0	0	475	12	0	0	0	0	0
CMS Energy*	4,176	65	24	822	13	0	395	6	1,023	16	0	0	0
Commonwealth Edison	9,703	43	0	11,487	51	0	1,309	6	0	0	0	22	0
Commonwealth Energy System*	1,024	94	-3	0	0	0	48	4	0	0	0	17	2
Consolidated Edison	6,323	68	0	849	9	0	2,076	22	0	0	0	0	0
Delmarva Power & Light	1,794	72	6	321	13	0	361	14	0	0	0	23	1
Detroit Edison	7,458	76	3	971	10	58	378	4	917	9	0	147	1
Dominion Resources*	6,192	52	130	3,180	27	1	906	8	1,592	13	1	0	0
DPL*	2,469	93	10	0	0	0	149	6	0	0	0	34	1
Duke Power	6,735	43	307	7,054	45	0	599	4	1,452	9	0	0	0
DQE*	2,106	74	-16	663	23	-1	0	0	0	0	0	66	2
Eastern Utilities Associates*	509	85	1	46	8	0	0	0	0	0	0	47	8
El Paso Electric	828	55	0	602	40	0	69	5	0	0	0	0	0
Empire District Electric	435	64	0	0	0	0	228	34	16	2	0	0	0
Entergy Corp.*	12,108	73	0	3,797	23	1	528	3	70	0	0	33	0
Florida Progress* (FPC)	4,152	66	-43	692	11	4	1,445	23	0	0	0	0	0
FPL Group* (FP&L)	8,372	61	-69	2,885	21	0	2,344	17	0	0	0	28	0
General Public Utilities*	3,657	53	-33	1,428	21	-32	318	5	305	4	-2	1,160	17
Green Mountain Power	14	10	1	0	0	0	79	58	36	26	0	8	6
Gulf States Utilities	6,247	91	619	655	9	0	0	0	0	0	0	0	0
Hawaiian Electric*	1,278	82	14	0	0	0	129	8	0	0	0	152	10
Houston Industries*	11,434	84	-30	770	6	385	1,410	10	0	0	0	0	0
Idaho Power	992	36	1	0	0	0	50	2	1,731	62	-11	0	0
IE Industries*	518	49	168	368	35	18	161	15	0	0	0	6	1
Illinois Power	3,340	78	0	807	19	1	138	3	0	0	-2	0	0
Interstate Power	896	94	0	0	0	0	44	5	0	0	0	11	1
Iowa Resources*	867	76	13	0	0	0	275	24	0	0	0	0	0
Iowa Southern*	574	99	0	0	0	0	0	0	0	0	0	6	1
Iowa-Illinois Gas & Electric	907	65	0	385	28	0	97	7	3	0	0	0	0
IPALCO Enterprises*	2,755	97	-16	0	0	0	60	2	0	0	0	14	0
Kansas City Power & Light	2,105	70	30	533	18	3	387	13	0	0	0	0	0
Kansas Gas & Electric	1,897	78	1	534	22	4	0	0	0	0	0	3	0
Kentucky Utilities	3,075	97	-12	0	0	0	59	2	24	1	0	0	0
KPL Gas Service	2,250	87	58	0	0	0	339	13	0	0	0	0	0
Long Island Lighting	INFORMATION NOT PROVIDED BY COMPANY												
Louisville Gas & Electric	2,134	95	0	0	0	0	108	5	0	0	0	0	0
Madison Gas & Electric	424	67	15	95	15	2	115	18	0	0	0	0	0
MDU Resources Group, Inc.	359	86	8	0	0	0	60	14	0	0	0	0	0
Midwest Energy*	985	83	0	0	0	0	204	17	0	0	0	0	0
Minnesota Power	1,158	91	1	0	0	0	0	0	116	9	2	0	0
Montana Power*	899	63	-71	0	0	0	0	0	518	36	-2	5	0
Nevada Power	1,312	75	0	0	0	0	399	23	0	0	0	30	2
New England Electric*	2,620	66	3	141	4	0	0	0	1,162	29	2	57	1
New York State Electric & Gas	2,414	90	9	193	7	-1	0	0	65	2	-2	7	0
Niagara Mohawk Power	3,654	65	108	1,050	19	-4	230	4	680	12	4	0	0
Northeast Utilities*	INFORMATION NOT PROVIDED BY COMPANY												
Northern Indiana Public Service	3,145	93	0	0	0	0	241	7	10	0	0	0	0
Northern States Power	3,905	57	59	1,540	23	-9	1,127	17	255	4	29	0	0
Ohio Edison	4,647	78	0	1,187	20	2	113	2	0	0	0	26	0
Oklahoma Gas & Electric	5,645	99	1	0	0	0	59	1	0	0	0	0	0
Orange & Rockland Utilities	902	88	0	0	0	0	74	7	44	4	0	0	0
Otter Tail Power	535	85	1	0	0	0	87	14	4	1	0	0	0
Pacific Gas & Electric	7,213	49	NA	2,160	15	NA	418	3	3,723	25	NA	1,302	9
Pacificorp	6,110	84	2988	27	0	0	15	0	1,103	15	127	20	0
Pennsylvania Power & Light	5,785	69	-6035	1,890	23	0	486	6	146	2	0	22	0
Philadelphia Electric	2,769	36	0	2,883	37	0	804	10	1,290	17	0	13	0
Pinnacle West Capital*	2,095	53	-66	1,109	28	0	754	19	6	0	0	0	0
Portland General*	670	25	9	745	28	0	650	24	611	23	0	6	0
Potomac Electric Power	4,809	89	0	0	0	0	565	11	0	0	0	1	0
Public Service Enterprise Group*	4,329	43	0	2,807	28	0	2,786	28	165	2	0	5	0
Public Service of Colorado	2,474	90	17	0	0	-270	171	6	84	3	0	16	1
Public Service of Indiana	5,376	96	0	0	0	0	0	0	55	1	0	196	3
Public Service of New Hampshire	INFORMATION NOT PROVIDED BY COMPANY												
Public Service of New Mexico	1,181	74	0	390	25	0	20	1	0	0	0	0	0
Puget Sound Power & Light	858	46	1	0	0	0	699	37	310	17	1	3	0
Rochester Gas & Electric	541	44	0	621	50	0	29	2	47	4	0	0	0
San Diego Gas & Electric	INFORMATION NOT PROVIDED BY COMPANY												
SCANA Corporation* (SCE&G)	2,286	59	0	590	15	0	259	7	756	19	0	0	0
Sierra Pacific Power	742	89	0	0	0	0	37	4	7	1	0	50	6
Southern California Edison	8,769	62	1	2,541	18	0	1,614	11	1,153	8	-1	8	0
Southern Company*	22,565	76	1513	3,418	11	514	1,171	4	2,592	9	0	0	0
Southern Indiana Gas & Electric	1,028	88	-4	0	0	0	135	12	0	0	0	0	0
Southwestern Public Service	3,945	97	2865	0	0	0	92	2	0	0	0	14	0
St. Joseph Light & Power Co.	276	78	0	0	0	0	80	22	0	0	0	0	0
TECO Energy*	2,954	94	60	0	0	0	188	6	0	0	0	0	0
Texas Utilities*	17,804	97	0	0	0	0	585	3	0	0	0	0	0
TNP Enterprises* (Tex-NM Power)	39	78	1	0	0	0	11	22	0	0	0	0	0
Tucson Electric Power	1,113	84	0	0	0	0	218	16	0	0	0	0	0
Union Electric	5,307	71	-81	1,125	15	7	374	5	631	8	0	5	0
United Illuminating	1,121	95	1	43	4	0	0	0	0	0	0	22	2
Utilicorp United	652	69	23	0	0	0	295	31	0	0	0	0	0
Washington Water Power*	453	31	0	0	0	0	68	5	946	64	0	0	0
Wisconsin Energy*	INFORMATION NOT PROVIDED BY COMPANY												
Wisconsin Power & Light	1,463	77	-2	217	11	2	182	10	42	2	0	1	0
Wisconsin Public Service	1,277	75	7	219	13	3	153	9	54	3	0	4	0

* Holding company

** Simple and Combined-Cycle

NA - Not Available/Not Applicable

Company	Transmission				Distribution							
					Overhead				Underground			
	Below 189 kV (circuit miles)	Miles Added	189 kV & Up (circuit miles)	Miles Added	Below 22 kV (pole miles)	Miles Added	22 kV & Up (pole miles)	Miles Added	Below 22 kV (cable miles)	Miles Added	22 kV & Up (cable miles)	Miles Added
Allegheny Power System*	3,456	7	1,107	0	50,133	390	4,610	37	3,833	321	22	6
American Electric Power*	15,795	0	5,926	0	92,905	497	5,897	306	7,280[2]	245[2]	577[2]	119[2]
Atlantic Energy*	1,194	26	64	1	8,967	2908	0	0	904	69	0	0
Baltimore Gas & Electric	658	10	495	6	NA	NA	732	0	NA	NA	350	-121
Boston Edison	200	NA	162	NA	4,611	NA	0	NA	7,523	NA	0	NA
Carolina Power & Light	3,110	-1	3,051	22	NA	NA	38,162	325	NA	NA	5,181	451
Centel*	NA	NA	NA	NA	NA	NA	6,684	-41	NA	NA	718	24
Centerior Energy*	1,994	NA	516	NA	16,531	NA	0	NA	6,806	NA	20	NA
Central Hudson Gas & Electric	526	0	76	0	6,438	35	46	0	931	49	0	0
Central Illinois Public Service	4,266	8	305	1	8,307	1	0	0	721	28	0	0
Central Louisiana Electric	801	35	363	10	0	0	10,795	103	0	0	276	14
Central Maine Power	2,024	13	208	1	17,249	222	324	29	875	218	12	0
Central Vermont Public Service	622	0	0	0	7,305	62	0	0	169	17	0	0
Central & South West*	14,017	4233	1,965	300	56,008	-1597	573	53	6,512	692	361	2
Cilcorp*	284	1	47	0	5,600	7	615	-1	1,767	38	7	1
Cincinnati Gas & Electric	1,323	-8	383	0	9,042	18	543	15	2,283	140	33	1
CMS Energy*	7,943	10	1,918	0	48,675	382	0	0	0	0	6,870	-48
Commonwealth Edison	2,446	4	2,552	-1	0	NA	36,091	57	0	NA	24,785	1309
Commonwealth Energy System*	300	5	61	0	3,730	-31	2,062	46	2,632	108	1,020	67
Consolidated Edison	22	0	409	0	25,400	34	505	17	58,578	164	6,818	-8
Delmarva Power & Light	1,127	4	263	0	1,816	21	4,768	-5	1,002	59	2,461	166
Detroit Edison	4,436	-6	1,030	57	30,291	169	0	0	8,350	327	0	0
Dominion Resources*	2,797	-71	3,096	96	NA	NA	37,214	165	NA	NA	16,453	893
DPL*	1,345	0	448	0	NA	NA	NA	NA	NA	NA	NA	NA
Duke Power	9,380	44	3,100	0	49,295	597	9,558	144	5,267	425	2,639	254
DQE*	513	1	148	0	5,743	-615	888	484	1,781	-437	1,029	603
Eastern Utilities Associates*	184	-2	178	0	890	4	3,285	777	265	15	829	10
El Paso Electric	711	30	840	52	3,170	32	1,505	49	841	28	137	10
Empire District Electric	1,257	9	22	1	4,909	59	0	0	250	5	0	0
Entergy Corp.*	7,206	7	3,046	69	67,185	455	4,749	-12	3,724	173	1,677	-27
Florida Progress* (FPC)	2,714	33	1,557	0	NA	NA	NA	NA	4,473	273	0	0
FPL Group* (FP&L)	2,256	1	3,293	4	NA	NA	36,532	569	NA	NA	14,503	885
General Public Utilities*	4,441	27	2,204	21	42,627	1495	5,367	-109	14,999	904	1,465	191
Green Mountain Power	281	0	0	0	2,258	22	20	1	310	36	7	1
Gulf States Utilities	3,144[1]	NA	1,034[1]	NA	18,264	125	1,407	12	1,773	26	115	6
Hawaiian Electric*	1,470	-5	0	0	4,018	74	0	0	2,478	54	0	0
Houston Industries*	2,504	7	1,032	2	18,154	96	1,457	31	4,427	-870	1,244	-88
Idaho Power	3,241[1]	167[1]	1,481[1]	0	12,998	-78	4,204	52	4,882	147	232	27
IE Industries*	3,193	-19	67	1	4,719	3	0	0	1,958	105	0	0
Illinois Power	2,321	0	484	0	16,774	119	1,331	1	1,210	56	4	0
Interstate Power	2,518	4	74	0	0	0	NA	NA	589	25	0	0
Iowa Resources*	1,115	2	345	0	11,538	179	0	0	2,711	165	0	0
Iowa Southern*	932	0	61	0	3,154	3	0	0	NA	NA	478	17
Iowa-Illinois Gas & Electric	632	-37	305	0	4,674	15	0	0	0	-1203	0	0
IPALCO Enterprises*	604	-4	454	0	4,687	8	0	0	4,854	264	0	0
Kansas City Power & Light	1,379	36	295	1	8,881	31	0	0	5,929	329	0	0
Kansas Gas & Electric	1,595	2	663	0	7,766	-9	0	0	2,241	95	0	0
Kentucky Utilities	4,268	-4	412	0	14,579	132	0	0	943	79	0	0
KPL Gas Service	3,610	10	791	1	12,616	82	0	0	1,305	798	0	0
Long Island Lighting	INFORMATION NOT PROVIDED BY COMPANY											
Louisville Gas & Electric	760	0	131	0	3,321	1	106	20	2,127	33	0	0
Madison Gas & Electric	178	-1	124	0	1,075	-2	0	0	826	153	0	0
MDU Resources Group, Inc.	2,831	0	319	0	2,824	-1	0	0	1,766	18	0	0
Midwest Energy*	2,146	1	184	0	0	0	0	0	NA	NA	NA	NA
Minnesota Power	1,541[1]	2[1]	607[1]	0	3,791	-1555	637	-3	998	31	4	-11
Montana Power*	5,564	17	1,445	0	12,996	33	0	0	0	0	0	NA
Nevada Power	568	17	638	0	2,943	61	0	0	3,876	419	0	0
New England Electric*	1,994	-7	684	51	16,818	116	763	-41	7,481	170	219	-2
New York State Electric & Gas	3,790	1	813	0	30,880	239	1,934	-39	0	0	0	0
Niagara Mohawk Power	8,065	5	1,126	0	0	NA	108,949	429	0	NA	7,896	224
Northeast Utilities*	INFORMATION NOT PROVIDED BY COMPANY											
Northern Indiana Public Service	2,659	6	332	0	7,636	2	0	0	876	78	0	0
Northern States Power	5,408	-66	1,460	-10	28,065	-33	0	0	12,044	330	0	0
Ohio Edison	4,893	-10	628	0	24,892	45	0	0	3,641	211	0	0
Oklahoma Gas & Electric	3,616	19	982	0	0	0	20,574	94	0	NA	5,803	96
Orange & Rockland Utilities	471	0	80	0	4,756	66	0	0	1,164	103	0	0
Otter Tail Power	4,863	8	411	1	0	NA	0	NA	0	NA	0	NA
Pacific Gas & Electric	INFORMATION NOT PROVIDED BY COMPANY											
Pacificorp	9,549	6006	5,565	2327	0	NA	44,153	15980	NA	NA	NA	NA
Pennsylvania Power & Light	0	0	1,308	0	49,424	521	2,397	-4	8,843	698	14	0
Philadelphia Electric	179	-158	767	23	12,224	394	61	0	17,337	637	17	0
Pinnacle West Capital*	2,358[1]	NA	2,419[1]	NA	10,731	38	0	NA	7,229	237	0	NA
Portland General*	933[1]	NA	1,038[1]	NA	8,769	796	0	0	5,319[3]	192[3]	0	0
Potomac Electric Power	26	0	783	0	4,511	-4	328	9	11,118	358	792	8
Public Service Enterprise Group*	283	13	814	92	NA	NA	47	0	27,339	1397	2,691	58
Public Service of Colorado	1,587	-19	1,373	58	11,490	-32	1,521	25	5,649	226	247	16
Public Service of Indiana	4,005	9	1,392	-2	18,250	17	0	0	2,872	307	0	-9
Public Service of New Hampshire	INFORMATION NOT PROVIDED BY COMPANY											
Public Service of New Mexico	888	0	1,896	0	4,734	27	0	-4707	2,393	65	0	0
Puget Sound Power & Light	1,849[1]	-4[1]	401[1]	179[1]	10,185	189	137	-7	4,967	421	24	4
Rochester Gas & Electric	705	-1	0	0	6,719	-10	0	0	4,152	-26	0	0
San Diego Gas & Electric	INFORMATION NOT PROVIDED BY COMPANY											
SCANA Corporation* (SCE&G)	2,412	3	788	0	6,322	94	7,753	132	112	NA	94	NA
Sierra Pacific Power	2,705	-781	914	914	6,810	6810	1,318	-6639	668	668	2,491	-523
Southern California Edison	6,594	13	5,326	0	NA	NA	44,816	136	53,496	3136	190	71
Southern Company*	19,953	58	6,340	-20	NA	NA	93,754	1506	NA	NA	19,596	2257
Southern Indiana Gas & Electric	859	-1	0	0	3,176	-1	0	0	835	37	0	0
Southwestern Public Service	4,022	2	1,515	1	NA	NA	NA	NA	NA	NA	NA	NA
St. Joseph Light & Power Co.	415	0	117	0	2,178	13	0	0	140	7	0	0
TECO Energy*	800	-4	357	3	6,687	43	0	0	2,068	102	0	0
Texas Utilities*	8,936	62	3,836	2	48,248	54	4,698	555	8,102	-128	2,225	269
TNP Enterprises* (Tex-NM Power)	1,248[1]	-1,306[1]	76[1]	36[1]	8,955	547	0	0	483	14	0	0
Tucson Electric Power	325	0	1,504	0	7,361	214	486	-35	3,314	97	0	0
Union Electric	2,202	1	988	0	20,611	126	4,007	7	9,342	349	359	1
United Illuminating	91	0	6	0	3,077	13	0	0	1,096	13	2	0
Utilicorp United	1,247[1]	18[1]	58[1]	0	6,637	-80	104	0	755	35	0	0
Washington Water Power*	1,507[1]	0	657[1]	0	8,686	0	588	0	1,430	0	0	0
Wisconsin Energy*	INFORMATION NOT PROVIDED BY COMPANY											
Wisconsin Power & Light	2,683	45	107	1	16,872	31	0	0	1,347	80	0	0
Wisconsin Public Service	1,492	-36	124	0	NA	NA	19,532	37	NA	NA	1,929	163

*Holding company
NA - Not Available/Not Applicable
[1] Pole Miles
[2] Circuit Miles
[3] Conduit Bank Miles

KG&E also said that 33.08 GWh was used on July 2, a new record for a single day. The company met all these needs.

Another record was broken by Dayton Power & Light Co., which reported an all-time peak level of usage of 2.60 GW at 2:00 p.m. on July 9 by the people in the Miami Valley. It exceeded the previous level of 2.59 GW set on Aug. 17, 1988. The utility met the load called for.

Generation changes

There were no great surprises in the amounts and types of generation utilized by the *EL&P* Top 100 (Table 8).

The largest increase over 1988 reported was in the hydro and pumped storage category, where the Top 100 increased their aggregate capacity 18.7 percent to 26,430 MW (Table 3).

Three utilities accounted for the major portion of this increase—PacifiCorp (127 MW added in '89), American Electric Power (48 MW added) and Northern States Power Co. (29 MW added).

Few companies reduced their dependence on hydro power and pumped storage.

Overall coal consumption reached 990-million tons in 1989, reported the National Coal Association. However, this amount included exports.

The NCA also estimated that electric utility consumption was projected to increase by 7-million tons over the 1989 level to 773-million tons. But the association admits coal's share of this market will probably decline slightly in 1990 to 55.5 percent. It attributes this decline to an increase in nuclear generation and in hydro power.

Only two new coal-fired power plants came online in 1989, adding up to 1667 MW of fresh capacity. But four new plants were expected onstream in 1990.

Nuclear energy accounted for some

TABLE 4.
TOP GENERATING UNITS BY HEAT RATE
(capac. factor > 50%)

Rank & Unit	Capacity (MW)	Utility	Heat Rate (Btu/kWh)
1. Commanche Power St	260	Central & South West	8,831
2. Marshall -4	660	Duke Power	9,044
3. Canal Plant -1	572	Commonwealth Energy System	9,057
4. Belews Creek -2	1,120	Duke Power	9,074
5. Brayton Point -3	622	New England Electric	9,080
6. Marshall -3	660	Duke Power	9,112
7. Conemaugh -2	33	Jointly Owned	9,159
8. Belews Creek -1	1,120	Duke Power	9,186
9. Cardinal -1	600	American Electric Power	9,189
10. Morgantown -2	582	Potomac Electric Power	9,228
11. Somerset -1	686	New York State Electric & Gas	9,229
12. J H Campbell -3	719	CMS Energy	9,248
13. Monroe -1	750	Detroit Edison	9,262
14. Amos -2	800	American Electric Power	9,279
15. Fort Martin -2	555	Allegheny Power System	9,281
16. Brayton Point -2	253	New England Electric	9,308
17. Amos -1	800	American Electric Power	9,316
18. Clinch River -2	235	American Electric Power	9,327
19. Trenton Channel -9	500	Detroit Edison	9,343
20. Marshall -1	385	Duke Power	9,355

19 percent of the energy produced in the U.S. in 1989, with a capacity of approximately 98,000 MW. This was by far the most power gotten from the atom of any country. If the Seabrook and Shoreham plants had not been placed in such difficulties, this nuclear capacity could have been higher.

Perhaps the streamlining of the licensing process by the Nuclear Regulatory Commission will help get nuclear units up and running faster and more easily in the future.

Another hope is for the advanced, passive, light-water, modular plants being designed by Westinghouse Electric Co. and General Electric Co. The plants also should help add to the speed and ease of bringing on new nuclear capacity. If these plants truly are standardized, as the CANDUs are in Canada, licensing could be less dependent on and less delayed by some of today's "roadblocks." This, in turn, could lead to much less costly plants and lower the price of the electricity they produce.

Gas-cooled reactors also are under development that hold out the promise of failsafe operation. Supposedly, one of these would be able to withstand simultaneous failure of the reactor's control rods and its cooling system.

Since combustion turbines were not broken out into a separate category in last year's report, the increase in their use cannot be listed this year. However, next year's report should show how this interesting class of generation is trending.

Type of T&D still key to trends

Transmission and distribution figures reported were a "mixed bag" (Table 9). Overall, among the *EL&P* Top 100, transmission miles were almost universally more than in 1988. Few utilities reduced their total transmission line mileages.

But many increased their installed base, such as Central & South West, which added more than 4200 transmission circuit miles for below 189 kV and 300 miles for handling 189 kV and above. PacifiCorp added 6006 and 2327 circuit miles, respectively, for below and above 189 kV. But the company did not break out how many of these were attributable to its merger with Utah Power & Light.

In the distribution area, as might be expected, even less mileage was taken out of service.

The big distribution changes apparently were in converting overhead lines to underground ones.

Houston Industries went against this trend by apparently reducing its underground lines by 958 cable miles and adding 127 overhead pole miles of cable.

On the other hand, Southern Co. added 2257 cable miles of underground lines (but also added 1506 pole miles aboveground.)

Transmission lines loaded

Utilities will continue to sell electricity back-and-forth for economic and reliability reasons.

However, notes NERC, parts of the bulk electric transmission systems in some regions may be loaded up to their limits of reliability much of the time by intersystem transfers added onto their normal loads. Controls for operating systems to coordinate the movements also may be taxed to their limits by all these transfers.

TABLE 5.
TOP SYSTEM HEAT RATES, CONVENTIONAL FOSSIL-FUELED BOILERS

Utility	Heat Rate (Btu/kWh)
1. Duke Power	9,387
2. Commonwealth Energy System	9,591
3. American Electric Power	9,707
4. CMS Energy (Consumers Pwr.)	9,737
5. Detroit Edison	9,836
6. New York State Elec. & Gas	9,873
7. Cincinnati Gas & Electric	9,887
8. United Illuminating	9,916
9. Florida Progress	9,924
10. DPL	9,934

A coordination plan

For instance, portions of NERC's East Central (ECAR) region will be heavily loaded much of this summer. In fact, imports from the Mid-Atlantic region probably will be curtailed during peak demand periods because of transmission limitations.

A Reliability Coordination Plan was developed by utilities owning and operating the transmission systems in eastern ECAR, the Mid-Atlantic Area Council (MAAC) and a subregion of the Southeastern Electric Reliability Council (SERC). The plan is used to limit or curtail transfers to ensure system reliability is maintained in a specific part of the system.

Since transfer levels are predicted to be about the same as those of the summer of 1988, using the plan along with other operating procedures will probably be necessary to maintain reliability.

Region problems still exist

In the southern portion of the MAAC region, import needs will be heightened and critical transmission lines loaded because the Calvert Cliffs nuclear units will not be online. Emergency demand reductions may be necessary in the Baltimore-Washington area until Calvert Cliffs Unit No. 1 returns to service.

Some other regions

MAIN's (Mid-America Interconnected Network's) capability for importing from MAPP also is "marginally adequate," according to NERC.

And inside MAIN itself, Eastern Missouri's import capability from Kansas and Oklahoma are considered inadequate.

In addition, the South-Central Illinois transmission lines from Eastern Missouri and Eastern Missouri's from Minnesota are considered marginally adequate.

The rest of MAIN's transmission system interregional transfer capability is judged "adequate" for reliable operation for all transfers.

MAIN's export capabilities either increased or remained the same, except for those to the Southwest Power Pool (SPP), which went down slightly.

In the south

SERC (Southeastern Electric Reliability Council) transmission systems are becoming more heavily loaded due to the region's demand growth and increase in the number of transfers there.

In SERC, several interregional and intraregional transfer capabilities were reduced in the summer of '88 and remain reduced. Transfer limits also were lowered by wheeling and new patterns of generation dispatch.

However, NERC feels there is sufficient capacity in this region's transmission system to accommodate emergency transfers.

And the northeast

The NEPOOL portion of the Northeast Power Coordinating Council (NPCC) has a good transmission capacity outlook for the summer. Emergency measures should not be needed.

The New York Power Pool part of NPCC should get by all right by using contract interruptible demand and load management resources.

The situation also looks promising because of planned capacity increases of non-utility generators and Nine Mile Point Unit No. 1 returning to full capacity operation.

If all goes well...

Of course, all of the above predictions are based on several important assumptions:

- Weather will be "normal."
- Generation and transmission equipment will perform as reliably as expected.
- Large generating units undergoing their scheduled maintenance or refueling outages will be returned to service on time.
- Demand reductions expected from load management and interruptible demand will be as effective as planned.

Note these changes

The Top 100 Electric Utilities' Operating Performances Report has been modified continuously over the years, usually in minor ways. But this report has some major, if subtle, reworkings that are intended to reflect how the electric utility industry is changing.

These changes to the report involve the way combustion turbine and internal-combustion engine data are reported, new criteria for ranking individual unit heat rates and restrictions on steam boiler heat rate qualifications.

Combustion turbines, because of their growing importance to generating system upgrade and expansion plans, now are no longer lumped in with internal-combustion engines, but are reported on separately. This separate listing for combustion turbines can be seen in Tables 3 and 8.

Also in Table 8, diesel-generated power has been moved into the "Other" column because of its small contribution to the totals after combustion turbines are separated into a separate category.

Criteria for inclusion in Table 4 have been changed as a result of suggestions from readers. Fossil-fired generating units with the best heat rates now must have individual capacity factors of 50 percent or greater to be listed. Previously, selection was based on total system capacity factors. Readers pointed out that if individual units were to be singled out, then selection should be on the basis of these units' own specific capacity factors.

Lastly, Table 5 now lists the best heat rates for only conventional steam boilers, the major method of generating electricity in the country. In the past, the listing was not exclusively made up of this group.

If you have specific suggestions about how the Top 100 Electric Utilities Operations Report could be made even more useful, just put them on the postcard at the beginning of this article and mail it to *EL&P*. Every response will receive careful consideration when preparing future reports.

Midland partners complete sale/leaseback

DEARBORN, MI—Midland Cogeneration Venture—49 percent owned by CMS Energy Corp.—completed a $2.3-billion sale/leaseback transaction covering the Midland facility, the largest in U.S. history.

In addition, MCV partners announced creation of a second partnership to expand generating capacity at the 1370-MW combined-cycle natural-gas fired MCV.

A CMS Energy subsidiary also would be a 49-percent partner in that deal. No timeline was given for expansion, although it may be contingent on power sales to other Midwest utilities.

The 25-year sale/leaseback transaction was completed with a consortium of institutional investors.

Twelve-year permanent debt financing totaling $536 million was also arranged with 30 lenders.

CMS Energy subsidiaries' 49-percent MCV-partner interest has an investment value of $57 million, a 35-percent lessor interest with an investment value of $207 million, and four series of MCV notes totalling $1.2-billion. Also, CMS has rights to an additional $300 million in notes contingent upon successful appeals of certain regulatory decisions.

CMS said recent legal decisions support CMS's position, suggest that the Michigan Public Service Commission (MPSC) lacks jurisdiction over holding company control of assets and helped open the way for completing the MCV sale/leaseback deal. However, further litigation over the matter seems likely because state regulators contend the CMS share—$1.5 billion in assets—should remain with the utility subsidiary, Consumers Power Co.

On May 28, Ingham County Circuit Court Judge Thomas L. Brown refused to reinstate a preliminary injuction against CMS Energy Corp. and its subsidiaries (CMS). That preliminary injunction was vacated in a unanimous decision on May 23 by the Michigan Court of Appeals and remanded to the circuit court.

The Michigan attorney general and the MPSC sought the preliminary injunction to prohibit CMS from transferring or using the $1.5 billion in debt and equity interest received from MCV in exchange for assets from the abandoned Midland nuclear plant.

Equipment service group expands capabilities

MILWAUKEE—A-C Equipment Services Corp.—formerly part of Allis-Chalmers Corp.—has completed four acquisitions that become part of a newly formed Electrical Services Group.

Richard G. Carlson, president, A-C Equipment Services said, "Our services to electric utilities and large industrial customers include switchgear repair and testing, hydro generator services, replacement coil manufacture, and static excitation systems for turbo and hydro generators."

The hydro generator services and static excitation systems were acquired from Siemens Energy & Automation. Switchgear repair and testing business was acquired from Emmorton Electric Testing, Baltimore, MD, and a replacement coil business was acquired from Whittaker Electric, Grand Rapids, MI.

The group will headquarter in West Allis, WI, along with the switchgear repair and testing business, and the hydro generator services.

Replacement coil manufacturing will operate from Hammond, IN, in the facilities formerly owned by Southern Electric Coil Co. The static excitation systems will be based in Roswell, GA.